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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/604,192	06/30/2003	Jason S. Katcha	GEMS8081.173	1191

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EXAMINER

HO, ALLEN C

ART UNIT	PAPER NUMBER
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2882

DATE MAILED: 01/11/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/604,192

Applicant(s)

KATCHA ET AL.

Examiner

Allen C. Ho

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 16 December 2004.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-24 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-24 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 30 June 2003 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Claim Rejections - 35 USC § 102

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

2. Claims 1 and 8-10 are rejected under 35 U.S.C. 102(b) as being anticipated by Tanaka (U. S. Patent No. 4,995,069).

With regard to claim 1, Tanaka disclosed an x-ray generator for a CT scanner, the generator comprising: a slip ring (17) to transfer power to a rotating high voltage (HV) tank (20a, 20b); a rotatable x-ray tube (21) operationally connected to the slip ring to receive power from the HV tank and project x-rays toward a subject to be scanned; and a stationary inverter (14a, 14b) to provide AC power to the slip ring to transference to the HV tank.

With regard to claims 8-10, Tanaka disclosed a CT imager comprising: a rotatable gantry having an imaging bore disposed therethrough, and a stationary base (1a) supporting the gantry; a slip ring (17) disposed in the rotatable gantry and electrically connected to an x-ray tube (21) and an HV tank (20a, 20b); and a power conditioner (14a, 14b) external to the gantry to receive a DC voltage and generate an AC voltage waveform that is applied to the HV tank through the slip ring.

3. Claims 1, 8-10, 18, 19, and 21-24 are rejected under 35 U.S.C. 102(b) as being anticipated by Yamada *et al.* (U. S. Patent No. 4,969,171).

With regard to claim 1, Yamada *et al.* disclosed an x-ray generator for a CT scanner, the generator comprising: a slip ring (6) to transfer power to a rotating high voltage (HV) tank (7, 8); a rotatable x-ray tube (9) operationally connected to the slip ring to receive power from the HV tank and project x-rays toward a subject to be scanned; and a stationary inverter (3) to provide AC power to the slip ring to transference to the HV tank.

With regard to claims 8-10, Yamada *et al.* disclosed a CT imager comprising: a rotatable gantry having an imaging bore disposed therethrough, and a stationary base supporting the gantry; a slip ring (6) disposed in the rotatable gantry and electrically connected to an x-ray tube (9) and an HV tank (7, 8); and a power conditioner (3) external to the gantry to receive a DC voltage and generate an AC voltage waveform that is applied to the HV tank through the slip ring.

With regard to claims 18 and 21-24, Yamada *et al.* disclosed a CT scanner comprising: a rotatable x-ray tube (9) and a rotatable HV tank (7, 8); a slip ring (6) to transfer current to the HV tank; a stationary base having an inverter (3) to supply AC power to the slip ring for transference to the HV tank; and the inverter having at least one resonant circuit (2, an LC circuit) connected to the slip ring.

With regard to claim 19, Yamada *et al.* disclosed the CT scanner of claim 18, further comprising a transformer (71, 81) connected to the at least one resonant circuit and the slip ring.

Claim Rejections - 35 USC § 103

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

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(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

5. Claims 2-7 and 13-17 are rejected under 35 U.S.C. 103(a) as being unpatentable over Tanaka (U. S. Patent No. 4,995,069) as applied to claims 1 and 8 above, and further in view of Blake *et al.* (U. S. Patent No. 5,400,385).

With regard to claims 2-4, 13, and 14, Tanaka disclosed the x-ray generator of claim 1. However, Tanaka failed to teach that the stationary inverter includes a number of power switches in an H-bridge configuration, the configuration having a pair of outputs such that at least one output is connected to a resonant circuit.

Blake *et al.* disclosed a common-type inverter circuit (46), which includes a number of power switches (UL, UR, LL, LR) in an H-bridge configuration, the configuration having a pair of outputs such that at least one output is connected to a resonant circuit (a LC circuit that includes inductor 47 and capacitor 49).

It would have been obvious to a person of ordinary skill in the art at the time the invention was made to employ an inverter disclosed by Blake *et al.*, since a person would be motivated to employ a circuit that is proven by its wide use.

With regard to claims 5-7, Tanaka disclosed the x-ray generator of claim 2, wherein the resonant circuit is connected to an input of a transformer (16a, 16b) and wherein the transformer has outputs to the slip ring.

With regard to claims 15-17, Tanaka disclosed the CT imager of claim 13, further comprising a transformer (16a, 16b) connected between the at least one series-resonant circuit and the slip ring.

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6. Claims 18-24 are rejected under 35 U.S.C. 103(a) as being unpatentable over Tanaka (U. S. Patent No. 4,995,069) in view of Blake *et al.* (U. S. Patent No. 5,400,385).

With regard to claims 18-24, Tanaka disclosed a CT scanner comprising: a rotatable x-ray tube (21) and a rotatable HV tank (20a, 20b); a slip ring (17) to transfer current to the HV tank; a stationary base having an inverter (14a, 14b) to supply AC power to the slip ring for transference to the HV tank.

However, Tanaka failed to teach that the inverter has at least one resonant circuit connected to the slip ring.

Blake *et al.* disclosed a common-type inverter circuit (46), which includes a number of power switches (UL, UR, LL, LR) in an H-bridge configuration, the configuration having a pair of outputs such that at least one output is connected to a resonant circuit (a LC circuit that includes inductor 47 and capacitor 49).

It would have been obvious to a person of ordinary skill in the art at the time the invention was made to employ an inverter disclosed by Blake *et al.*, since a person would be motivated to employ a circuit that is proven by its wide use.

7. Claims 2-4 are rejected under 35 U.S.C. 103(a) as being unpatentable over Yamada *et al.* (U. S. Patent No. 4,969,171) as applied to claim 1 above, and further in view of Blake *et al.* (U. S. Patent No. 5,400,385).

With regard to claims 2-4, Yamada *et al.* disclosed the x-ray generator of claim 1. However, Yamada *et al.* failed to teach that the stationary inverter includes a number of power switches in an H-bridge configuration, the configuration having a pair of outputs such that at least one output is connected to a resonant circuit.

Blake *et al.* disclosed a common-type inverter circuit (46), which includes a number of power switches (UL, UR, LL, LR) in an H-bridge configuration, the configuration having a pair of outputs such that at least one output is connected to a resonant circuit (a LC circuit that includes inductor 47 and capacitor 49).

It would have been obvious to a person of ordinary skill in the art at the time the invention was made to employ an inverter disclosed by Blake *et al.*, since a person would be motivated to employ a circuit that is proven by its wide use.

8. Claims 11 and 12 are rejected under 35 U.S.C. 103(a) as being unpatentable over Tanaka (U. S. Patent No. 4,995,069) as applied to claim 8 above.

With regard to claims 11 and 12, Tanaka disclosed the CT imager of claim 8, wherein the power conditioner includes an inverter. However, Tanaka failed to teach that the inverter in configured to supply an approximate 20k - 1M Hz AC waveform to the slip ring.

It would have been obvious to a person of ordinary skill in the art at the time the invention was made to configure the inverter to supply an approximate 20k - 1M Hz AC waveform to the slip ring, since a person would be motivated to transform an AC voltage waveform into an appropriate voltage in the secondary winding of a transformer.

Response to Arguments

9. Applicant's arguments filed 16 December 2004 with respect to the rejection(s) of claim(s) 1-4, 8-10, 18, and 21-24 under 35 U.S.C. 102(b) have been fully considered and are persuasive. Therefore, the rejection has been withdrawn. However, upon further consideration, a new

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ground(s) of rejection is made in view of Tanaka (U. S. Patent No. 4,995,069) and Yamada *et al.* (U. S. Patent No. 4,969,171).

10. Applicant's arguments filed 16 December 2004 with respect to the drawings have been fully considered and are persuasive. The objections of the drawings have been withdrawn.

Conclusion

11. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure:

- (1) Lunding *et al.* (U. S. Patent No. 6,563,717 B2) disclosed a power supply for x-ray generators.
- (2) Collier (U. S. Patent No. 5,023,768) disclosed a high voltage, high power supply for a CT x-ray tube.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Allen C. Ho whose telephone number is (571) 272-2491. The examiner can normally be reached on Monday - Friday from 8:00 am - 5:00 pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Edward J. Glick can be reached at (571) 272-2490. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Allen C. Ho

Allen C. Ho
Patent Examiner
Art Unit 2882

10 January 2005